

## SEQUENCE LISTING

<110> Allen, Stephen M.  
Caimi, Perry G.  
Stoop, Johan M.

<120> Fructan Biosynthetic Enzymes

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<151> 2000-10-10

<150> 60/269,543  
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Thr Thr Asn Ser Lys Ser Ile Ser Gln Ser Asp Arg Leu Ile Trp Glu  
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Arg Thr Ser Phe His Phe Gln Pro Ala Lys Asn Phe Ile Tyr Asp Pro  
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Asn Gly Pro Leu Phe His Met Gly Trp Tyr His Leu Phe Tyr Gln Tyr  
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Asn Pro Tyr Gly Pro Val Trp Gly Asn Met Ser Trp Gly His Ser Val  
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Ser Lys Asp Met Ile Asn Trp Phe Glu Leu Pro Val Ala Leu Val Pro  
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Thr Glu Trp Tyr Asp Ile Glu Gly Val Leu Ser Gly Ser Thr Thr Val  
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Phe Ser Gln Leu Gln Cys Lys Ala Val Pro Val Asn Ile Ser Asp Pro  
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Leu Leu Ile Glu Trp Val Lys Tyr Asp Gly Asn Pro Ile Leu Tyr Thr  
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Pro Pro Gly Ile Gly Leu Lys Asp Tyr Arg Asp Pro Ser Thr Val Trp  
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His	Trp	Pro	Val	Glu	Ile	Glu	Ser	Leu	Arg	Ser	Asn	Gly	Gln	Glu	
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Arg Thr Ala Phe His Phe Gln Pro Ala Lys Asn Phe Ile Tyr Asp Pro			
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Pro Pro Gly Ile Gly Leu Lys Asp Tyr Arg Asp Pro Ser Thr Val Trp			
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Trp Glu Gly Tyr Gly Met Asp Phe Tyr Ser Ile Gly Thr Tyr Asp Ala			
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Phe Asn Asp Lys Trp Thr Pro Asp Asn Pro Glu Leu Asp Val Gly Ile			
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 Asp Pro Val Lys Lys Arg Arg Ile Thr Trp Ala Tyr Val Gly Glu Ser  
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 His Trp Pro Val Glu Glu Ile Glu Ser Leu Arg Tyr Asn Gly Gln Glu  
 405 410 415  
 Phe Lys Glu Ile Lys Leu Glu Pro Gly Ser Ile Ala Pro Leu Asp Ile  
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 Gly Thr Ala Thr Gln Leu Asp Ile Val Ala Thr Phe Lys Val Asp Glu  
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 485 490 495  
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 Asp Lys Leu Arg Ser Ser Leu Asp Phe Asp Lys Glu Arg Val Val Tyr  
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 Gly Ser Thr Val Pro Val Leu Asp Asp Glu Leu Thr Met Arg Leu  
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 Ala Ile Thr Ser Arg Val Tyr Pro Thr Lys Ala Ile Tyr Glu Gly Ala  
 565 570 575  
 Lys Leu Phe Leu Phe Asn Asn Ala Thr Asp Thr Ser Val Lys Ala Ser  
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Pro Asn Thr Asp Met Trp Glu Cys Val Asp Phe Tyr Pro Val Ser Leu  
50 55 60

Thr Asn Asp Ser Ala Leu Asp Met Ala Ala Tyr Gly Ser Gly Ile Lys  
65 70 75 80

His Val Ile Lys Glu Ser Trp Glu Gly His Gly Met Asp Trp Tyr Ser  
85 90 95

Ile Gly Thr Tyr Asp Ala Ile Asn Asp Lys Trp Thr Pro Asp Asn Pro  
 100 105 110

Glu Leu Asp Val Gly Ile Gly Leu Arg Cys Asp Tyr Gly Lys Phe Phe  
115 120 125

Ala Ser Lys Ser Leu Tyr Asp Pro Leu Lys Lys Arg Arg Val Thr Trp  
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Trp Ala Thr Val Tyr Asn Val Gly Arg Thr Ile Val Leu Asp Arg Lys  
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Thr Gly Thr His Leu Leu His Trp Pro Val Glu Glu Val Glu Ser Leu  
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Arg Tyr Asn Gly Gln Glu Phe Lys Glu Ile Glu Leu Glu Pro Gly Ser  
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Thr Phe Glu Val Asp Gln Ala Ala Leu Asn Ala Thr Ser Glu Thr Asp  
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Asp Ile Tyr Gly Cys Thr Thr Ser Leu Gly Ala Ala Gln Arg Gly Ser  
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Leu Gly Pro Phe Gly Leu Ala Val Leu Ala Asp Gly Thr Leu Ser Glu  
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Leu Thr Pro Val Tyr Phe Tyr Ile Ala Lys Lys Ala Asp Gly Gly Leu  
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Ser Thr His Phe Cys Thr Asp Lys Leu Arg Ser Ser Leu Asp Tyr Asp  
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Gly Gln Arg Val Val Tyr Gly Ser Thr Val Pro Val Leu Asp Asp Glu  
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Glu Leu Thr Met Arg Leu Leu Val Asp His Ser Ile Val Glu Gly Phe  
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Ala Gln Gly Arg Thr Val Ile Thr Ser Arg Val Tyr Pro Thr Lys  
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Ala Ile Tyr Glu Gln Ala Lys Leu Phe Leu Asn Asn Ala Thr Gly  
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<212> DNA

<213> Triticum aestivum

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Thr	Pro	Ala	Asp	Pro	Asn	Asp	Pro	Phe	Leu	Arg	Arg	Trp	Thr	Lys	His
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TODOT 2000000000

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Lys	Thr	Arg	Thr	Asn	Leu	Leu	Leu	Trp	Pro	Val	Glu	Glu	Ile	Glu	Thr
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Gly	Ala	Ser	Val	Met	Ala	Glu	Arg	Leu	Val	Val	His	Glu	Met	Asp	Ser
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<212> DNA

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<213> Triticum aestivum

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35 40 45

Phe Leu Arg Arg Trp Thr Lys His Pro Ala Asn Pro Val Ile Trp Ser  
50 55 60

Pro Pro Gly Ile Gly Thr Lys Asp Phe Arg Asp Pro Met Thr Ala Trp  
65 70 75 80

Tyr Asp Glu Ser Asp Asp Thr Trp Arg Thr Leu Leu Gly Ser Lys Asp  
85 90 95

Asp His Asp Gly His His Asp Gly Ile Ala Met Met Tyr Lys Thr Lys  
 100 105 110  
 Asp Phe Leu Asn Tyr Glu Leu Ile Pro Gly Ile Leu His Arg Val Gln  
 115 120 125  
 Arg Thr Gly Glu Trp Glu Cys Ile Asp Phe Tyr Pro Val Gly His Arg  
 130 135 140  
 Ser Asn Asp Asn Ser Ser Glu Met Leu His Val Leu Lys Ala Ser Met  
 145 150 155 160  
 Asp Asp Glu Arg His Asp Tyr Tyr Ser Leu Gly Thr Tyr Asp Ser Ala  
 165 170 175  
 Ala Asn Ala Trp Thr Pro Ile Asp Pro Glu Leu Asp Leu Gly Ile Gly  
 180 185 190  
 Leu Arg Tyr Asp Trp Gly Lys Phe Tyr Ala Ser Thr Ser Phe Tyr Asp  
 195 200 205  
 Pro Ala Lys Lys Arg Arg Val Leu Met Gly Tyr Val Gly Glu Val Asp  
 210 215 220  
 Ser Lys Arg Ala Asp Val Val Lys Gly Trp Ala Ser Ile Gln Ser Val  
 225 230 235 240  
 Pro Arg Thr Ile Ala Leu Asp Glu Lys Thr Arg Thr Asn Leu Leu  
 245 250 255  
 Trp Pro Val Glu Glu Ile Glu Thr Leu Arg Leu Asn Ala Thr Glu Leu  
 260 265 270  
 Ser Asp Val Thr Leu Asn Thr Gly Ser Val Ile His Ile Pro Leu Arg  
 275 280 285  
 Gln Gly Thr Gln Leu Asp Ile Glu Ala Thr Phe His Leu Asp Ala Ser  
 290 295 300  
 Ala Val Ala Ala Leu Asn Glu Ala Asp Val Gly Tyr Asn Cys Ser Ser  
 305 310 315 320  
 Ser Gly Gly Ala Val Asn Arg Gly Ala Leu Gly Pro Phe Gly Leu Leu  
 325 330 335  
 Val Leu Ala Ala Gly Asp Arg Arg Gly Glu Gln Thr Ala Val Tyr Phe  
 340 345 350  
 Tyr Val Ser Arg Gly Leu Asp Gly Gly Leu His Thr Ser Phe Cys Gln  
 355 360 365  
 Asp Glu Leu Arg Ser Ser Arg Ala Lys Asp Val Thr Lys Arg Val Ile  
 370 375 380  
 Gly Ser Thr Val Pro Val Leu Asp Gly Glu Ala Phe Ser Met Arg Val  
 385 390 395 400  
 Leu Val Asp His Ser Ile Val Gln Gly Phe Ala Met Gly Gly Arg Thr  
 405 410 415

Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ala Tyr Gln Glu Ala Lys  
420 425 430

Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Met Ala Glu Arg  
435 440 445

Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu Ser Asn Met  
450 455 460

Asp Asp His Ser Tyr Val Gln  
465 470

<210> 11  
<211> 476  
<212> DNA  
<213> Triticum aestivum

<400> 11  
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tactttca acaatgccac cgtgtccacgt gttacggcgg aaaggctcg tctgcacgag 120  
atggacttcg cacacaacca gctctccaaat atggacgatt actcgatgt tcaatgaagc 180  
tcttgatcatc ctatcgataa aagctacattt ggtatcaaaga cgctccacaa ggaaggccaa 240  
gacatatatt taaacgatcc cgcacagccct cgcttgcaga attgaaacat ctatccctgg 300  
gtcattgttcgatccatgatcataatatttctt tggtgggtgtt aggtatcgata 360  
tagtttgttgggttggact ttgtttgtttt acatagttaa ccgggttgtt ctgcataata 420  
agcttatgtt ttttgtttaga aatgttattttt ttgtttgtttaa aaaaaaaaaaaaaaaa 476

<210> 12  
<211> 58  
<212> PRT  
<213> Triticum aestivum

<400> 12  
Ala Arg Ala Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ala Tyr Gln  
1 5 10 15

Glu Ala Lys Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Thr  
20 25 30

Ala Glu Arg Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu  
35 40 45

Ser Asn Met Asp Asp Tyr Ser Tyr Val Gln  
50 55

<210> 13  
<211> 2093  
<212> DNA  
<213> Parthenium argentatum Grey

<400> 13  
gcacgagcgt gtacatagta aaaaaaccct ccagccacca catgtggct tcataatccca 60  
ccacccccc ttccatttc caccatgtac ctgaaaaaccct ccagggaccc accggattta 120  
cgggggttcg tctgtccatcc atcgaaaaaa cgcttgcgt aacccttgg tccgttatgg 180  
taatctgtgg tctgggtgtt gtaatcggca accagacaca ggtacccaaat gtacccaa 240  
gccccatcgatgg tggccggccacc acattccaaat ctcgttgcg aaaaaatqat atgaaacggg 300  
ttccgggaga ttggatcg ggtgtgtatccatggca acgttccgt tatcatttc 360  
aacctgtacaa aactacattt atgtatccgt atggccaat gtatcatgtt ggtgggttacc 420  
atctatTTTA tcagttacaaac ccagaatctg ccatatgggg caacatcaca tgggggtact 480

卷一百一十五

<210> 14

<211> 635

<212> PRT

<213> *Parthenium argentatum* Grey

<400> 14

Met	Met	Ala	Ser	Ser	Thr	Thr	Thr	Ser	Pro	Leu	Ile	Leu	His	Asp	Asp
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Pro Glu Asn Leu Gln Glu Pro Thr Gly Phe Thr Gly Val Arg Arg Pro  
20 25 30

Ser Ile Ala Lys Ala Leu Cys Val Thr Leu Val Ser Val Met Val Ile  
 35 40 45  
 Cys Gly Leu Val Ala Val Ile Ser Asn Gln Thr Gln Val Pro Gln Val  
 50 55 60

Ala Asn Ser His Gln Gly Ala Ala Thr Thr Phe Thr Thr Gln Leu Pro

Lys Ile Asp Met Lys Arg Val Pro Gly Glu Leu Asp Ser Gly Ala Asp

Val Gln Trp Gln Arg Ser Ala Tyr His Phe Gln Pro Asp Lys Asn Tyr

Ile Ser Asp Pro Asp Gly Pro Met Tyr His Met Gly Trp Tyr His Leu

Gly His Ser Val Ser Lys Asp Met Ile Asn Trp Phe His Leu Pro Phe  
 145 150 155 160  
 Ala Met Val Pro Asp His Trp Tyr Asp Ile Glu Gly Val Met Thr Gly  
 165 170 175  
 Ser Ala Thr Val Leu Pro Asn Gly Glu Ile Ile Met Leu Tyr Thr Gly  
 180 185 190  
 Asn Ala Tyr Asp Leu Ser Gln Val Gln Cys Leu Ala Tyr Ala Val Asn  
 195 200 205  
 Ser Ser Asp Pro Leu Leu Ile Glu Trp Lys Lys Tyr Glu Gly Asn Pro  
 210 215 220  
 Val Leu Leu Pro Pro Pro Gly Val Gly Tyr Lys Asp Phe Arg Asp Pro  
 225 230 235 240  
 Ser Thr Leu Trp Leu Gly Pro Asp Gly Glu Tyr Arg Met Val Met Gly  
 245 250 255  
 Ser Lys His Asn Glu Thr Ile Gly Cys Ala Leu Ile Tyr His Thr Thr  
 260 265 270  
 Asn Phe Thr His Phe Glu Leu Asn Glu Glu Val Leu His Ala Val Pro  
 275 280 285  
 His Thr Gly Met Trp Glu Cys Val Asp Leu Tyr Pro Val Ser Thr Thr  
 290 295 300  
 His Thr Asn Gly Leu Asp Met Val Asp Asn Gly Pro Asn Val Lys Tyr  
 305 310 315 320  
 Val Leu Lys Gln Ser Gly Asp Glu Asp Arg His Asp Trp Tyr Ala Ile  
 325 330 335  
 Gly Ser Tyr Asp Trp Val Asn Asp Lys Trp Tyr Pro Asp Asp Pro Glu  
 340 345 350  
 Asn Asp Val Gly Ile Gly Leu Arg Tyr Asp Tyr Gly Lys Phe Tyr Ala  
 355 360 365  
 Ser Lys Thr Phe Tyr Asp Gln His Lys Lys Arg Arg Val Leu Trp Gly  
 370 375 380  
 Tyr Val Gly Glu Thr Asp Pro Glu Lys Tyr Asp Leu Thr Lys Gly Trp  
 385 390 395 400  
 Ala Asn Ile Leu Asn Ile Pro Arg Thr Val Val Leu Asp Thr Lys Thr  
 405 410 415  
 Lys Thr Asn Leu Ile Gln Trp Pro Ile Glu Glu Thr Glu Lys Leu Arg  
 420 425 430  
 Ser Lys Lys Tyr Asp Lys Phe Val Asp Val Glu Leu Arg Pro Gly Ser  
 435 440 445  
 Leu Ile Pro Leu Glu Ile Gly Thr Ala Thr Gln Leu Asp Ile Val Ala  
 450 455 460

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Thr	Phe	Glu	Val	Asp	Gln	Met	Met	Leu	Glu	Ser	Thr	Leu	Glu	Ala	Asp
465					470				475					480	
Val	Leu	Phe	Asn	Cys	Thr	Thr	Ser	Val	Gly	Ser	Val	Gly	Arg	Gly	Val
					485				490					495	
Leu	Gly	Pro	Phe	Gly	Val	Val	Val	Leu	Ala	Asp	Ala	Gln	Arg	Thr	Glu
					500				505					510	
Gln	Leu	Pro	Val	Tyr	Phe	Tyr	Ile	Ala	Lys	Asp	Thr	Asp	Gly	Thr	Ser
					515				520					525	
Arg	Thr	Tyr	Phe	Cys	Ala	Asp	Glu	Thr	Arg	Ser	Ser	Lys	Asp	Val	Asp
					530				535					540	
Val	Gly	Lys	Trp	Val	Tyr	Gly	Ser	Ser	Val	Pro	Val	Leu	Pro	Asn	Glu
					545				550			555		560	
Lys	Tyr	Asn	Met	Arg	Leu	Leu	Val	Asp	His	Ser	Ile	Val	Glu	Gly	Phe
					565				570					575	
Ala	Gln	Asn	Gly	Arg	Thr	Val	Val	Thr	Ser	Arg	Val	Tyr	Pro	Thr	Lys
					580				585					590	
Ala	Ile	Tyr	Asn	Ala	Ala	Lys	Val	Phe	Leu	Phe	Asn	Asn	Ala	Thr	Gly
					595				600					605	
Ile	Arg	Val	Lys	Ala	Ser	Val	Lys	Ile	Trp	Lys	Met	Ala	Glu	Ala	Glu
					610				615					620	
Leu	Asn	Pro	Phe	Pro	Val	Thr	Gly	Trp	Trp	Thr	Ser				
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<211>	2107														
<212>	DNA														
<213>	Helianthus sp.														
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gatggotca	tccaccacca	ccacccctct	cattctccat	gatgaccctg	aaaacctccc										120
agaactcacc	ggatctccga	caactcgctg	tctatccatc	gcaaaagtgc	tttcgggat										180
ccttqtttcg	gttcttagta	catgtgcct	tgttgctta	atcaacaacc	aaacatata										240
accaccgcgc	gcaccacat	tcgcaactca	gttgccaa	atgtatctga	agcgggttcc										300
aggaaaatgt	gattcgatgt	ctgagggttga	atggcaacga	tccgcattt	attttcaacc										360
cgacaaaaat	ttcattatgt	atccgtatgg	cccaatgtat	cacatggat	gttacatct										420
attcttatcg	tacaacccgt	aatctgcatt	ctggggcaac	atcacatgg	ggcactcggt										480
atcgaaagac	atgtacact	gttccatct	ccctttcgcc	atggttctgt	accatttgta										540
cgacatcgaa	gttgtcatga	cggttgcgc	taacgtctc	cctaattgtc	aatatcatcat										600
gtcttacacg	ggcaacgcgt	acgatcttc	ccaagttacaa	tgcttgcat	acgctgtca										660
ctcgttggat	cccccttcta	tagatgtgaa	aaaatatgtaa	gttacccctg	tettgttccc										720
accacccagg	gtgggttaca	aggactttcg	ggaccatcc	acatttgtt	tggcccttga										780
tgtgtatata	agaatgtttaa	tggggtccaa	gcacaacgag	actatttgtat	gtgcctttgtat										840
ttacccatacc	actaaatttt	tcgcatttttga	atttggat	gagggtgttc	atgcagtcccc										900
acataactgtt	atgttggaaat	gttgtatct	ttacccatgt	tccacccgtac	acacaaaacgg										960
gttggacatg	gtggataacg	ggccaaatgt	taataatctgt	ttgaaacaaad	gtggggat										1020
agatcgccat	gattgtttagt	caatggaaat	ttatgtgt	gtaaatgtata	agtggatccc										1080
ggatgaccgc	aaaaatgtat	tgggtattgg	attaagat	gattttgaa	aattttatgc										1140
gttccaaagact	ttttatgtacc	aacataagaa	gaggagggtc	cttggggct	atgttggaga										1200

卷之三

<210> 16

<211> 630

<212> PRT

<213> *Helianthus* sp.

<400> 16

Met Met Ala Ser Ser Thr Thr Thr Thr Pro Leu Ile Leu His Asp Asp  
1 5 10 15

Pro Glu Asn Leu Pro Glu Leu Thr Gly Ser Pro Thr Thr Arg Arg Leu  
20 25 30

Ser Ile Ala Lys Val Leu Ser Gly Ile Leu Val Ser Val Leu Val Thr  
35 40 45

Cys Ala Leu Val Ala Leu Ile Asn Asn Gln Thr Tyr Glu Pro Pro Ala  
50 55 60

Ala Thr Thr Phe Ala Thr Gln Leu Pro Asn Ile Asp Leu Lys Arg Val  
65 70 75 80

Pro Gly Lys Leu Asp Ser Ser Ala Glu Val Glu Trp Gln Arg Ser Ala  
85 90 95

Tyr His Phe Gln Pro Asp Lys Asn Phe Ile Ser Asp Pro Asp Gly Pro  
           100                 105                 110

Met Tyr His Met Gly Trp Tyr His Leu Phe Tyr Gln Tyr Asn Pro Glu  
115 120 125

Ser Ala Ile Trp Gly Asn Ile Thr Trp Gly His Ser Val Ser Lys Asp  
 130 135 140

Met	Ile	Asn	Trp	Phe	His	Leu	Pro	Phe	Ala	Met	Val	Pro	Asp	His	Trp
145					150					155					160

Tyr Asp Ile Glu Gly Val Met Thr Gly Ser Ala Thr Val Leu Pro Asn  
165 170 175

Gly Gln Ile Ile Met Leu Tyr Thr Gly Asn Ala Tyr Asp Leu Ser Gln  
180 185 190

TOOTOT-2000000000

Val	Gln	Cys	Leu	Ala	Tyr	Ala	Val	Asn	Ser	Ser	Asp	Pro	Leu	Leu	Ile
195							200					205			
Glu	Trp	Lys	Lys	Tyr	Glu	Gly	Asn	Pro	Val	Leu	Phe	Pro	Pro	Pro	Gly
210					215					220					
Val	Gly	Tyr	Lys	Asp	Phe	Arg	Asp	Pro	Ser	Thr	Leu	Trp	Leu	Gly	Pro
225				230					235				240		
Asp	Gly	Glu	Tyr	Arg	Met	Val	Met	Gly	Ser	Lys	His	Asn	Glu	Thr	Ile
				245				250				255			
Gly	Cys	Ala	Leu	Ile	Tyr	His	Thr	Thr	Asn	Phe	Thr	His	Phe	Glu	Leu
		260					265					270			
Lys	Glu	Glu	Val	Leu	His	Ala	Val	Pro	His	Thr	Gly	Met	Trp	Glu	Cys
		275					280				285				
Val	Asp	Leu	Tyr	Pro	Val	Ser	Thr	Val	His	Thr	Asn	Gly	Leu	Asp	Met
		290				295				300					
Val	Asp	Asn	Gly	Pro	Asn	Val	Lys	Tyr	Val	Leu	Lys	Gln	Ser	Gly	Asp
		305			310				315				320		
Glu	Asp	Arg	His	Asp	Trp	Tyr	Ala	Ile	Gly	Ser	Tyr	Asp	Val	Val	Asn
		325				330			335						
Asp	Lys	Trp	Tyr	Pro	Asp	Asp	Pro	Glu	Asn	Asp	Val	Gly	Ile	Gly	Leu
		340				345				350					
Arg	Tyr	Asp	Phe	Gly	Lys	Phe	Tyr	Ala	Ser	Lys	Thr	Phe	Tyr	Asp	Gln
		355				360			365						
His	Lys	Lys	Arg	Arg	Val	Leu	Trp	Gly	Tyr	Val	Gly	Glu	Thr	Asp	Pro
		370				375				380					
Gln	Lys	Tyr	Asp	Ile	Ser	Lys	Gly	Trp	Ala	Asn	Ile	Leu	Asn	Ile	Pro
		385			390				395			400			
Arg	Thr	Val	Val	Leu	Asp	Thr	Lys	Thr	Lys	Thr	Asn	Leu	Ile	Gln	Trp
		405				410			415						
Pro	Ile	Glu	Glu	Thr	Glu	Asn	Leu	Arg	Ser	Lys	Thr	Tyr	Asp	Glu	Phe
		420				425				430					
Lys	Asp	Val	Glu	Leu	Arg	Pro	Gly	Ser	Leu	Val	Pro	Leu	Glu	Ile	Gly
		435				440				445					
Thr	Ala	Thr	Gln	Leu	Asp	Ile	Val	Ala	Thr	Phe	Glu	Ile	Asp	Gln	Lys
		450				455				460					
Met	Leu	Glu	Ser	Thr	Leu	Glu	Ala	Asp	Val	Leu	Phe	Asn	Cys	Thr	Thr
		465			470				475				480		
Ser	Glu	Gly	Ser	Val	Ala	Arg	Gly	Ala	Leu	Gly	Pro	Phe	Gly	Val	Val
		485				490				495					
Val	Leu	Ala	Asp	Ala	Gln	Arg	Ser	Glu	Gln	Leu	Pro	Val	Tyr	Phe	Tyr
		500				505				510					

100001-2633000

Ile Ala Lys Asp Ile Asp Gly Thr Ser Arg Thr Tyr Phe Cys Ala Asp  
 515 520 525

Glu Thr Arg Ser Ser Lys Asp Val Ser Val Gly Lys Trp Val Tyr Gly  
 530 535 540

Ser Ser Val Pro Val Leu Pro Gly Glu Lys Tyr Asn Met Arg Leu Leu  
 545 550 555 560

Val Asp His Ser Ile Val Glu Gly Phe Ala Gln Asn Gly Arg Thr Val  
 565 570 575

Val Thr Ser Arg Val Tyr Pro Thr Lys Ala Ile Tyr Asn Ala Ala Lys  
 580 585 590

Val Phe Leu Phe Asn Asn Ala Thr Gly Ile Ser Val Lys Ala Ser Ile  
 595 600 605

Lys Ile Trp Lys Met Ala Lys Ala Glu Leu Asn Pro Phe Pro Leu Pro  
 610 615 620

Gly Trp Thr Phe Glu Leu  
 625 630

<210> 17  
 <211> 615  
 <212> PRT  
 <213> Helianthus tuberosus

<400> 17  
 Met Gin Thr Pro Glu Pro Phe Thr Asp Leu Glu His Glu Pro His Thr  
 1 5 10 15

Pro Leu Leu Asp His His His Asn Pro Pro Pro Gln Thr Thr Thr Lys  
 20 25 30

Pro Leu Phe Thr Arg Val Val Ser Gly Val Thr Phe Val Leu Phe Phe  
 35 40 45

Phe Gly Phe Ala Ile Val Phe Ile Val Leu Asn Gln Gln Asn Ser Ser  
 50 55 60

Val Arg Ile Val Thr Asn Ser Glu Lys Ser Phe Ile Arg Tyr Ser Gln  
 65 70 75 80

Thr Asp Arg Leu Ser Trp Glu Arg Thr Ala Phe His Phe Gln Pro Ala  
 85 90 95

Lys Asn Phe Ile Tyr Asp Pro Asp Gly Gln Leu Phe His Met Gly Trp  
 100 105 110

Tyr His Met Phe Tyr Gln Tyr Asn Pro Tyr Ala Pro Val Trp Gly Asn  
 115 120 125

Met Ser Trp Gly His Ser Val Ser Lys Asp Met Ile Asn Trp Tyr Glu  
 130 135 140

Leu Pro Val Ala Met Val Pro Thr Glu Trp Tyr Asp Ile Glu Gly Val  
 145 150 155 160

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Leu Ser Gly Ser Thr Thr Val Leu Pro Asn Gly Gln Ile Phe Ala Leu  
 165 170 175  
 Tyr Thr Gly Asn Ala Asn Asp Phe Ser Gln Leu Gln Cys Lys Ala Val  
 180 185 190  
 Pro Val Asn Leu Ser Asp Pro Leu Leu Ile Glu Trp Val Lys Tyr Glu  
 195 200 205  
 Asp Asn Pro Ile Leu Tyr Thr Pro Pro Gly Ile Gly Leu Lys Asp Tyr  
 210 215 220  
 Arg Asp Pro Ser Thr Val Trp Thr Gly Pro Asp Gly Lys His Arg Met  
 225 230 235 240  
 Ile Met Gly Thr Lys Arg Gly Asn Thr Gly Met Val Leu Val Tyr Tyr  
 245 250 255  
 Thr Thr Asp Tyr Thr Asn Tyr Glu Leu Leu Asp Glu Pro Leu His Ser  
 260 265 270  
 Val Pro Asn Thr Asp Met Trp Glu Cys Val Asp Phe Tyr Pro Val Ser  
 275 280 285  
 Leu Thr Asn Asp Ser Ala Leu Asp Met Ala Ala Tyr Gly Ser Gly Ile  
 290 295 300  
 Lys His Val Ile Lys Glu Ser Trp Glu Gly His Gly Met Asp Trp Tyr  
 305 310 315 320  
 Ser Ile Gly Thr Tyr Asp Ala Ile Asn Asp Lys Trp Thr Pro Asp Asn  
 325 330 335  
 Pro Glu Leu Asp Val Gly Ile Gly Leu Arg Cys Asp Tyr Gly Arg Phe  
 340 345 350  
 Phe Ala Ser Lys Ser Leu Tyr Asp Pro Leu Lys Lys Arg Arg Ile Thr  
 355 360 365  
 Trp Gly Tyr Val Gly Glu Ser Asp Ser Ala Asp Gln Asp Leu Ser Arg  
 370 375 380  
 Gly Trp Ala Thr Val Tyr Asn Val Gly Arg Thr Ile Val Leu Asp Arg  
 385 390 395 400  
 Lys Thr Gly Thr His Leu Leu His Trp Pro Val Glu Glu Val Glu Ser  
 405 410 415  
 Leu Arg Tyr Asn Gly Gln Glu Phe Lys Glu Ile Lys Leu Glu Pro Gly  
 420 425 430  
 Ser Ile Ile Pro Leu Asp Ile Gly Thr Ala Thr Gln Leu Asp Ile Val  
 435 440 445  
 Ala Thr Phe Glu Val Asp Gln Ala Ala Leu Asn Ala Thr Ser Glu Thr  
 450 455 460  
 Asp Asp Ile Tyr Gly Cys Thr Thr Ser Leu Gly Ala Ala Gln Arg Gly  
 465 470 475 480

T00001-T000000

Ser Leu Gly Pro Phe Gly Leu Ala Val Leu Ala Asp Gly Thr Leu Ser  
485 490 495

Glu Leu Thr Pro Val Tyr Phe Tyr Ile Ala Lys Lys Ala Asp Gly Gly  
500 505 510

Val Ser Thr His Phe Cys Thr Asp Lys Leu Arg Ser Ser Leu Asp Tyr  
515 520 525

Asp Gly Glu Arg Val Val Tyr Gly Gly Thr Val Pro Val Leu Asp Asp  
530 535 540

Glu Glu Leu Thr Met Arg Leu Leu Val Asp His Ser Ile Val Glu Gly  
545 550 555 560

Phe Ala Gln Gly Gly Arg Thr Val Ile Thr Ser Arg Ala Tyr Pro Thr  
565 570 575

Lys Ala Ile Tyr Glu Gln Ala Lys Leu Phe Leu Phe Asn Asn Ala Thr  
580 585 590

Gly Thr Ser Val Lys Ala Ser Leu Lys Ile Trp Gln Met Ala Ser Ala  
595 600 605

Pro Ile His Gln Tyr Pro Phe  
610 615

<210> 18  
<211> 630  
<212> PRT  
<213> Helianthus tuberosus

<400> 18  
Met Met Ala Ser Ser Thr Thr Thr Thr Pro Leu Ile Leu His Asp Asp  
1 5 10 15

Pro Glu Asn Leu Pro Glu Leu Thr Gly Ser Pro Thr Thr Arg Arg Leu  
20 25 30

Ser Ile Ala Lys Val Leu Ser Gly Ile Leu Val Ser Val Leu Val Ile  
35 40 45

Gly Ala Leu Val Ala Leu Ile Asn Asn Gln Thr Tyr Glu Ser Pro Ser  
50 55 60

Ala Thr Thr Phe Val Thr Gln Leu Pro Asn Ile Asp Leu Lys Arg Val  
65 70 75 80

Pro Gly Lys Leu Asp Ser Ser Ala Glu Val Glu Trp Gln Arg Ser Thr  
85 90 95

Tyr His Phe Gln Pro Asp Lys Asn Phe Ile Ser Asp Pro Asp Gly Pro  
100 105 110

Met Tyr His Met Gly Trp Tyr His Leu Phe Tyr Gln Tyr Asn Pro Gln  
115 120 125

Ser Ala Ile Trp Gly Asn Ile Thr Trp Gly His Ser Val Ser Lys Asp  
130 135 140

TIGECOT 26330007

Met	Ile	Asn	Trp	Phe	His	Leu	Pro	Phe	Ala	Met	Val	Pro	Asp	His	Trp
145				150						155					160
Tyr	Asp	Ile	Glu	Gly	Val	Met	Thr	Gly	Ser	Ala	Thr	Val	Leu	Pro	Asn
			165					170						175	
Gly	Gln	Ile	Ile	Met	Leu	Tyr	Ser	Gly	Asn	Ala	Tyr	Asp	Leu	Ser	Gln
			180					185						190	
Val	Gln	Cys	Leu	Ala	Tyr	Ala	Val	Asn	Ser	Ser	Asp	Pro	Leu	Leu	Ile
			195				200					205			
Glu	Trp	Lys	Lys	Tyr	Glu	Gly	Asn	Pro	Val	Leu	Leu	Pro	Pro	Pro	Gly
			210				215					220			
Val	Gly	Tyr	Lys	Asp	Phe	Arg	Asp	Pro	Ser	Thr	Leu	Trp	Ser	Gly	Pro
			225				230			235				240	
Asp	Gly	Glu	Tyr	Arg	Met	Val	Met	Gly	Ser	Lys	His	Asn	Glu	Thr	Ile
			245					250					255		
Gly	Cys	Ala	Leu	Ile	Tyr	His	Thr	Thr	Asn	Phe	Thr	His	Phe	Glu	Leu
			260					265					270		
Lys	Glu	Glu	Val	Leu	His	Ala	Val	Pro	His	Thr	Gly	Met	Trp	Glu	Cys
			275				280				285				
Val	Asp	Leu	Tyr	Pro	Val	Ser	Thr	Val	His	Thr	Asn	Gly	Leu	Asp	Met
			290				295			300					
Val	Asp	Asn	Gly	Pro	Asn	Val	Lys	Tyr	Val	Leu	Lys	Gln	Ser	Gly	Asp
			305				310			315				320	
Glu	Asp	Arg	His	Asp	Trp	Tyr	Ala	Ile	Gly	Ser	Tyr	Asp	Ile	Val	Asn
			325					330				335			
Asp	Lys	Trp	Tyr	Pro	Asp	Asp	Pro	Glu	Asn	Asp	Val	Gly	Ile	Gly	Leu
			340					345				350			
Arg	Tyr	Asp	Phe	Gly	Lys	Phe	Tyr	Ala	Ser	Lys	Thr	Phe	Tyr	Asp	Gln
			355					360				365			
His	Lys	Lys	Arg	Arg	Val	Leu	Trp	Gly	Tyr	Val	Gly	Glu	Thr	Asp	Pro
			370					375				380			
Gln	Lys	Tyr	Asp	Leu	Ser	Lys	Gly	Trp	Ala	Asn	Ile	Leu	Asn	Ile	Pro
			385				390			395				400	
Arg	Thr	Val	Val	Leu	Asp	Leu	Glu	Thr	Lys	Thr	Asn	Leu	Ile	Gln	Trp
			405					410					415		
Pro	Ile	Glu	Glu	Thr	Glu	Asn	Leu	Arg	Ser	Lys	Lys	Tyr	Asp	Glu	Phe
			420				425					430			
Lys	Asp	Val	Glu	Leu	Arg	Pro	Gly	Ala	Leu	Val	Pro	Leu	Glu	Ile	Gly
			435				440					445			
Thr	Ala	Thr	Gln	Leu	Asp	Ile	Val	Ala	Thr	Phe	Glu	Ile	Asp	Gln	Lys
			450				455				460				

Met Leu Glu Ser Thr Leu Glu Ala Asp Val Leu Phe Asn Cys Thr Thr  
465 470 475 480

Ser Glu Gly Ser Val Ala Arg Ser Val Leu Gly Pro Phe Gly Val Val  
485 490 495

Val Leu Ala Asp Ala Gln Arg Ser Glu Gln Leu Pro Val Tyr Phe Tyr  
500 505 510

Ile Ala Lys Asp Ile Asp Gly Thr Ser Arg Thr Tyr Phe Cys Ala Asp  
515 520 525

Glu Thr Arg Ser Ser Lys Asp Val Ser Val Gly Lys Trp Val Tyr Gly  
530 535 540

Ser Ser Val Pro Val Leu Pro Gly Glu Lys Tyr Asn Met Arg Leu Leu  
545 550 555 560

Val Asp His Ser Ile Val Glu Gly Phe Ala Gln Asn Gly Arg Thr Val  
565 570 575

Val Thr Ser Arg Val Tyr Pro Thr Lys Ala Ile Tyr Asn Ala Ala Lys  
580 585 590

Val Phe Leu Phe Asn Asn Ala Thr Gly Ile Ser Val Lys Ala Ser Ile  
595 600 605

Lys Ile Trp Lys Met Gly Glu Ala Glu Leu Asn Pro Phe Pro Pro Leu Pro  
610 615 620

Gly Trp Thr Phe Glu Leu  
625 630

<210> 19

<211> 2115

<212> DNA

<213> *Triticum aestivum*

<400> 19

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 gatggccctc gattcagtc gttccaaggaa caattgtct cgcacagaag accccgacga 1260  
 acctcttctt ctggcccgta gaggagatgg agaccctccg cctcaacgcc accgaactta 1320  
 ggcacgtcac cttttaacacc ggctccgtca tccatatccc gtcggccaa ggactcagc 1380  
 tgcacatcga ggcacatcga caccatgtat cttctgtgt cgcgtccctc aatggggcg 1440  
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 cgtagccggc caaggatgtg acgaaaggcg ggatggggag cacggtgccg gtgctcgacy 1680  
 gggaggctt ctcgtatggg gtgtctgtt accactccat cgtgcaggc ttccgcatgg 1740  
 gggggaggac cacgtatggc tcgcgggtgt acccgatgg agcctatcag gaggcaaaag 1800  
 tgtaacttgtt caacaatgtc acccgatggca ggcgtatggc ggaaggctc gtctgtca 1860  
 agatggactc acacacacac cagtcctcata atatggacca tcacttcgtat gtccatgaa 1920  
 gctcttgcata tcacatcgata ataagctaca ttgatcaaa gacgcgcacc aaggaaggcc 1980  
 aagacatata taatgatcc cgcacacgc cgcgttgcaga attgaaaacat ctatccttgg 2040  
 gtcatgttctt gatgtgtt cactgtgaac tacagtatat tactttgtt ggcgtgaaaa 2100  
 aaaaaaaaaaaaaaaa aaaaaa 2115

&lt;210&gt; 20

&lt;211&gt; 600

&lt;212&gt; PRT

&lt;213&gt; Triticum aestivum

&lt;400&gt; 20

Met	Ala	Ser	Glu	Ser	Ser	Arg	Arg	Gly	Asp	Ser	Thr	Ser	Thr	Arg	Arg
1						5				10				15	

Arg	Ser	Gly	Gln	Glu	Pro	Leu	Ala	Val	Leu	Val	Ser	Ala	Lys	Asn	Gln
			20					25					30		

Ser	Ser	Ser	Glu	Glu	Arg	Ala	Gly	Gly	Gly	Leu	Arg	Val	Asp	Glu	Glu
			35				40				45				

Ala	Ala	Ala	Gly	Phe	Pro	Trp	Ser	Asn	Glu	Met	Leu	Gln	Trp	Gln	Arg
			50			55				60					

Ser	Gly	Tyr	His	Phe	Gln	Thr	Ala	Lys	Asn	Tyr	Met	Ser	Asp	Pro	Asn
			65				70			75			80		

Gly	Leu	Met	Tyr	Tyr	Asn	Gly	Trp	Tyr	His	Met	Phe	Phe	Gln	Tyr	Asn
			85				90			95					

Pro	Val	Gly	Thr	Asp	Trp	Asp	Asp	Gly	Met	Glu	Trp	Gly	His	Ala	Val
	100						105				110				

Ser	Arg	Asn	Leu	Val	Thr	Trp	Arg	Thr	Leu	Pro	Ile	Ala	Met	Val	Ala
			115				120				125				

Asp	Gln	Trp	Tyr	Asp	Ile	Leu	Gly	Val	Leu	Ser	Gly	Ser	Met	Thr	Val
	130					135				140					

Leu	Pro	Asn	Gly	Thr	Val	Ile	Met	Ile	Tyr	Thr	Gly	Ala	Thr	Asn	Ala
145						150			155			160			

Ser	Ala	Val	Glu	Val	Gln	Cys	Ile	Ala	Thr	Pro	Ala	Asp	Pro	Asn	Asp
			165				170				175				

Pro	Phe	Leu	Arg	Arg	Trp	Thr	Lys	His	Pro	Ala	Asn	Pro	Val	Ile	Trp
	180						185				190				

TOEOT 2000000000000000

Ser Pro Pro Gly Ile Gly Thr Lys Asp Phe Arg Asp Pro Met Thr Ala  
 195 200 205  
 Trp Tyr Asp Glu Ser Asp Asp Thr Trp Arg Thr Leu Leu Gly Ser Lys  
 210 215 220  
 Asp Asp His Asp Gly His His Asp Gly Ile Ala Met Met Tyr Lys Thr  
 225 230 235 240  
 Lys Asp Phe Leu Asn Tyr Glu Leu Ile Pro Gly Ile Leu His Arg Val  
 245 250 255  
 Gln Arg Thr Gly Glu Trp Glu Cys Ile Asp Phe Tyr Pro Val Gly His  
 260 265 270  
 Arg Ser Asn Asp Asn Ser Ser Glu Met Leu His Val Leu Lys Ala Ser  
 275 280 285  
 Met Asp Asp Glu Arg His Asp Tyr Tyr Ser Leu Gly Thr Tyr Asp Ser  
 290 295 300  
 Ala Ala Asn Ala Trp Thr Pro Ile Asp Pro Glu Leu Asp Leu Gly Ile  
 305 310 315 320  
 Gly Leu, Arg Tyr Asp Trp Gly Lys Phe Tyr Ala Ser Thr Ser Phe Tyr  
 325 330 335  
 Asp Pro Ala Lys Lys Arg Arg Val Leu Met Gly Tyr Val Gly Glu Val  
 340 345 350  
 Asp Ser Lys Arg Ala Asp Val Val Lys Gly Trp Ala Ser Ile Gln Ser  
 355 360 365  
 Val Pro Arg Thr Ile Ala Leu Asp Glu Lys Thr Arg Thr Asn Leu Leu  
 370 375 380  
 Leu Trp Pro Val Glu Glu Ile Glu Thr Leu Arg Leu Asn Ala Thr Glu  
 385 390 395 400  
 Leu Ser Asp Val Thr Leu Asn Thr Gly Ser Val Ile His Ile Pro Leu  
 405 410 415  
 Arg Gln Gly Thr Gln Leu Asp Ile Glu Ala Thr Phe His Leu Asp Ala  
 420 425 430  
 Ser Ala Val Ala Ala Leu Asn Glu Ala Asp Val Gly Tyr Asn Cys Ser  
 435 440 445  
 Ser Ser Gly Gly Ala Val Asn Arg Gly Ala Leu Gly Pro Phe Gly Leu  
 450 455 460  
 Leu Val Leu Ala Ala Gly Asp Arg Arg Gly Glu Gln Thr Ala Val Tyr  
 465 470 475 480  
 Phe Tyr Val Ser Arg Gly Leu Asp Gly Gly Leu His Thr Ser Phe Cys  
 485 490 495  
 Gln Asp Glu Leu Arg Ser Ser Arg Ala Lys Asp Val Thr Lys Arg Val  
 500 505 510

Ile Gly Ser Thr Val Pro Val Leu Asp Gly Glu Ala Phe Ser Met Arg  
515 520 525

Val Leu Val Asp His Ser Ile Val Gln Gly Phe Ala Met Gly Gly Arg  
530 535 540

Thr Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ala Tyr Gln Glu Ala  
545 550 555 560

Lys Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Met Ala Glu  
565 570 575

Arg Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu Ser Asn  
580 585 590

Met Asp Asp His Ser Tyr Val Gln  
595 600

<210> 21

<211> 625

<212> PRT

<213> Hordeum vulgare

<400> 21

Met Gly Ser His Gly Lys Pro Pro Leu Pro Tyr Ala Tyr Lys Pro Leu  
1 5 10 15

Pro Ser Asp Ala Ala Asp Gly Lys Arg Thr Gly Cys Met Arg Trp Ser  
20 25 30

Ala Cys Ala Thr Val Leu Thr Ala Ser Ala Met Ala Val Val Val  
35 40 45

Gly Ala Thr Leu Leu Ala Gly Leu Arg Met Glu Gln Ala Val Asp Glu  
50 55 60

Glu Ala Ala Ala Gly Gly Phe Pro Trp Ser Asn Glu Met Leu Gln Trp  
65 70 75 80

Gln Arg Ser Gly Tyr His Phe Gln Thr Ala Lys Asn Tyr Met Ser Asp  
85 90 95

Pro Asn Gly Leu Met Tyr Tyr Arg Gly Trp Tyr His Met Phe Tyr Gln  
100 105 110

Tyr Asn Pro Val Gly Thr Asp Trp Asp Asp Gly Met Glu Trp Gly His  
115 120 125

Ala Val Ser Arg Asn Leu Val Gln Trp Arg Thr Leu Pro Ile Ala Met  
130 135 140

Val Ala Asp Gln Trp Tyr Asp Ile Leu Gly Val Leu Ser Gly Ser Met  
145 150 155 160

Thr Val Leu Pro Asn Gly Thr Val Ile Met Ile Tyr Thr Gly Ala Thr  
165 170 175

Asn Ala Ser Ala Val Glu Val Gln Cys Ile Ala Thr Pro Ala Asp Pro  
180 185 190

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Asn	Asp	Pro	Leu	Leu	Arg	Arg	Trp	Thr	Lys	His	Pro	Ala	Asn	Pro	Val
			195				200							205	
Ile	Trp	Ser	Pro	Pro	Gly	Val	Gly	Thr	Lys	Asp	Phe	Arg	Asp	Pro	Met
			210			215								220	
Thr	Ala	Trp	Tyr	Asp	Glu	Ser	Asp	Glu	Thr	Trp	Arg	Thr	Leu	Leu	Gly
					230					235				240	
Ser	Lys	Asp	Asp	His	Asp	Gly	His	His	Asp	Gly	Ile	Ala	Met	Met	Tyr
				245					250					255	
Lys	Thr	Lys	Asp	Phe	Leu	Asn	Tyr	Glu	Leu	Ile	Pro	Gly	Ile	Leu	His
				260				265					270		
Arg	Val	Val	Arg	Thr	Gly	Glu	Trp	Glu	Cys	Ile	Asp	Phe	Tyr	Pro	Val
			275			280					285				
Gly	Arg	Arg	Ser	Ser	Asp	Asn	Ser	Ser	Glu	Met	Leu	His	Val	Leu	Lys
			290			295					300				
Ala	Ser	Met	Asp	Asp	Glu	Arg	His	Asp	Tyr	Tyr	Ser	Leu	Gly	Thr	Tyr
					310				315					320	
Asp	Ser	Ala	Ala	Asn	Thr	Trp	Thr	Pro	Ile	Asp	Pro	Glu	Leu	Asp	Leu
					325				330					335	
Gly	Ile	Gly	Leu	Arg	Tyr	Asp	Trp	Gly	Lys	Phe	Tyr	Ala	Ser	Thr	Ser
			340			345						350			
Phe	Tyr	Asp	Pro	Ala	Lys	Asn	Arg	Arg	Val	Leu	Met	Gly	Tyr	Val	Gly
			355				360					365			
Glu	Val	Ala	Ser	Lys	Arg	Ala	Asp	Val	Val	Lys	Gly	Trp	Ala	Ser	Ile
				370			375					380			
Gln	Ser	Val	Pro	Arg	Thr	Val	Ala	Leu	Asp	Glu	Lys	Thr	Arg	Thr	Asn
					385		390			395				400	
Leu	Leu	Leu	Trp	Pro	Val	Glu	Glu	Ile	Glu	Thr	Leu	Arg	Leu	Asn	Ala
					405				410					415	
Thr	Glu	Leu	Thr	Asp	Val	Thr	Ile	Asn	Thr	Gly	Ser	Val	Ile	His	Ile
				420			425					430			
Pro	Leu	Arg	Gln	Gly	Thr	Gln	Leu	Asp	Ile	Glu	Ala	Ser	Phe	His	Leu
			435				440					445			
Asp	Ala	Ser	Ala	Val	Ala	Ala	Leu	Asn	Glu	Ala	Asp	Val	Gly	Tyr	Asn
				450			455					460			
Cys	Ser	Ser	Ser	Gly	Gly	Ala	Val	Asn	Arg	Gly	Ala	Leu	Gly	Pro	Phe
			465				470					475			480
Gly	Leu	Leu	Val	Leu	Ala	Ala	Gly	Asp	Arg	Arg	Gly	Glu	Gln	Thr	Ala
				485				490					495		
Val	Tyr	Phe	Tyr	Val	Ser	Arg	Gly	Leu	Asp	Gly	Gly	Leu	His	Thr	Ser
				500			505					510			

Phe Cys Gln Asp Glu Leu Arg Ser Ser Arg Ala Lys Asp Val Thr Lys  
515 520 525

Arg Val Ile Gly Ser Thr Val Pro Val Leu Asp Gly Glu Ala Leu Ser  
530 535 540

Met Arg Val Leu Val Asp His Ser Ile Val Gln Gly Phe Asp Met Gly  
545 550 555 560

Gly Arg Thr Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ser Tyr Gln  
565 570 575

Glu Ala Arg Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Thr  
580 585 590

Ala Glu Arg Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu  
595 600 605

Ser Asn Glu Asp Asp Gly Met Tyr Leu His Gln Val Leu Glu Ser Arg  
610 615 620

His  
625